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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,384	10/16/2003	Muqtada Husain	10541-1868	2103

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EXAMINER

LUM VANNUCCI, LEE SIN YEE

ART UNIT	PAPER NUMBER
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3611

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/687,384

Applicant(s)

HUSAIN, MUQTADA

Examiner

Lee Lum

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-24 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. An Amendment was filed 11/15/04.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 15, 16, 19, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Wendelin 6578444.

Re Claims 1, 2 and 5, Wendelin discloses a system for providing an end-of-travel feedback from a road wheel to a driver of a vehicle, the vehicle having steer-by-wire system 600, the system comprising

Steering mechanism including steering wheel (module) 800 and steering shaft 700,

Clutches 100a, 100b, of end-of-travel mechanism 100 (all depicted in fig 3) coupling the shaft (c1, last paragraph) with the road wheel (inherent),

Controller 400 that senses when the road wheel has reached the end-of-travel position, and engages the clutch in response, and,

disengages it when the road wheel is away from that position, as disclosed in c2, first complete paragraph, and,

Motors 202, 302, controlling the angle of the road wheel (c1, ln 49-53).

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Re Claims 15, 16, 19 and 21, the reference further discloses a method for providing an end-of-travel feedback from a road wheel to the driver, the steps derived from the structure and means described above.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. Claims 3, 4, 6, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wendelin in view of Andonian et al 6681881.

Re Claims 3 and 17, Wendelin does not disclose engagement of the clutch as based on the angle of the road wheels, while Andonian shows this configuration in col 2, lines 48-50 and 54-55. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Andonian, to increase accuracy of the steer-by-wire system, by the addition of the factor of the road wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claims 4 and 18, Wendelin does not disclose engagement of the clutch as based on the rate of change of the angle of the road wheels, while Andonian shows this configuration in col 3, line 14; "vehicle yaw rate sensor". It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Andonian, to increase accuracy of the steer-by-wire system, by the addition of the factor of the rate of change of the wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claims 6 and 20, Wendelin does not disclose engagement of the clutch as based on the current draw of the road wheel motor, while Andonian shows this configuration in col 2, lines 50, 55 and 59-65. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Andonian, to increase accuracy of the steer-by-wire system, by the addition of the factor of the road wheel motor current draw by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

B. **Claims 22 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wendelin in view of Menjak et al 6598695.

Re Claim 22, Wendelin does not disclose engagement of the clutch as based on the angle of the steering wheel, while Menjak shows sensors 32 in col 3, lines 1-2. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Menjak, to increase accuracy of the steer-by-wire system, by the addition of the factor of the steering wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claim 24, Wendelin does not disclose engagement of the clutch as based on the applied torque to the steering wheel, while Menjak shows sensor 60. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Menjak, to increase accuracy of the steer-by-wire system, by the addition of the factor of the applied torque to the steering wheel by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

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C. **Claims 11, 13 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wendelin in view of Borsting et al 6484838.

Re Claim 11, Wendelin does not disclose the controller as having the capability to sense when the road wheel is pushing against an object, while Borsting shows this feature in col 5, lines 21-28. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Borsting, to increase accuracy of the steer-by-wire system, by the addition of the factor of the detection of an road obstruction by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claim 13, Wendelin does not disclose engagement of the clutch as based on the angle of the road wheels, while Borsting shows sensor 17 in col 5, lines 41-43. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Borsting, to increase accuracy of the steer-by-wire system, by the addition of the factor of the road wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claim 23, Wendelin does not disclose engagement of the clutch as based on the rate of change of the steering wheel angle, while Borsting shows this configuration in col 5, last paragraph, to col 6, line 2. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Borsting, to increase accuracy of the steer-by-wire system, by the addition of the factor of the acceleration of the steering wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

D. **Claims 12 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wendelin in view of Borsting, and in further view of Andonian.

Re Claim 12, the previous references do not disclose engagement of the clutch as based on the current draw of the road wheel motor, while Andonian shows this configuration in col 2, lines 50, 55 and 59-65. It would have been obvious to one with ordinary skill in the art at

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the time the invention was made to include this arrangement, as shown in Andonian, to increase accuracy of the steer-by-wire system, by the addition of the factor of the current draw of the road wheel motor by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

Re Claim 14, the previous references do not disclose engagement of the clutch as based on the rate of change of the angle of the road wheels, while shows this configuration in col 5, last paragraph, to col 6, line 2. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Andonian, to increase accuracy of the steer-by-wire system, by the addition of the factor of the rate of change of the road wheel angle by which to engage the clutch, thus increasing safety and comfort of the vehicle occupants.

4. **Claims 7-10** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Prior art does not disclose a system for providing an end-of-travel feedback as discussed above, further including, *inter alia*, the controller as disengaging the clutch when the steering wheel is rotated away from the end-of-travel position.

5. **RESPONSE TO REMARKS**

Examiner maintains her rejections as provided above, with Wendelin, and Wendelin in view of Andonian, etc.

In response to remarks beginning on p 8, Wendelin clearly discloses "a clutch coupled to the steering shaft" in c1, ln 65, to c2, ln 1. Column 2, to line 40, also provides additional elements of the recited structure of the present application:

The clutches 100a/b forming a portion of end-of-travel mechanism 100,  
Controller 400, when an end-of-travel condition is detected, engages (at least)  
the clutch via electrical connector 108.

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Therefore, Wendelin clearly discloses the "steering shaft as *dependent* of the road wheel actuation system" in the indicated portion of the reference. In fact, it is unclear how this issue can be otherwise because this relationship is inherent in the system, i.e.; the steering shaft is *dependent* of the road wheel actuation system because *a driver input is required*, in combination with the road wheel actuation system.

Lastly, Applicant is asked to note allowable subject matter.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

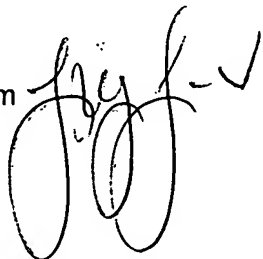
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


7. Communication with USPTO/Examiner

Any inquiry concerning this communication, or others, should be directed to Ms. Lum at 703 305-0232, M-Th, 9-6. If attempts to reach the examiner are unsuccessful, her supervisor, Ms. Lesley Morris is at 703 308-0629. Our fax number is 703 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications: private PAIR only, for published applications: private or public PAIR. For more information re PAIR: <http://pair-direct.uspto.gov>. Questions re private PAIR: contact the Electronic Business Center (EBC) at 866 217-9197.

Ms. Lee S. Lum  
Examiner  
1/19/05



  
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